



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,959	10/11/2001	Kay-Yut Chen	10018398	3006

7590 07/19/2007
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

TARAE, CATHERINE MICHELLE

ART UNIT	PAPER NUMBER
----------	--------------

3623

MAIL DATE	DELIVERY MODE
-----------	---------------

07/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/976,959	Applicant(s) CHEN ET AL.	
	Examiner C. Michelle Tarae	Art Unit 3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a Final Office Action in response to the communication received on April 27, 2007.

Claims 1, 8-9, 16 and 19-20 have been amended. Claim 18 has been canceled. Claims 1-17 and 19-20 are now pending in this application.

Response to Amendment

2. Applicant's amendments to claims 1, 8-9, 16 and 19-20 and cancellation of claim 18 are acknowledged.

The amendments to claims 1,8-9 and 20 are sufficient to overcome the 35 USC 112, second paragraph rejection set forth in the previous Office Action; therefore the 35 USC 112, second paragraph rejection of claims 1,8-9 and 20 is withdrawn.

Response to Arguments

3. Applicant's arguments with regard to the 35 USC 101 rejections have been fully considered and are found persuasive. Therefore, the 35 USC 101 rejections are withdrawn.

The remainder of Applicant's arguments has been fully considered, but are not found persuasive.

In the Remarks on pages 12-13, Applicant argues that FSM does not teach performing a query process in addition to said running said information market, said

Art Unit: 3623

query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation.

In response to the argument, Examiner respectfully disagrees and further submits Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

In the Remarks on pages 14-15, Applicant argues that FSM does not teach developing a new predictive aggregation formula with adjustments for personal characteristics of said participants as recited in claims 16 and 20.

In response to the argument, Examiner respectfully disagrees. On pages 4 and 9, FSM discusses maintaining participant characteristics such as value of their stocks, fantasy cash available, percentage gained and lost, where those characteristics represent participant's personal trading performance and are aggregated and used to rank the participants. Thus, Examiner respectfully submits FSM does teach developing a new predictive aggregation formula with adjustments for personal characteristics of said participants as recited in claims 16 and 20.

In the Remarks on pages 15-16, Applicant argues that there is no suggestion or motivation to combine FSM with Jennings to reject claims 7 and 8.

In response to the argument, Examiner respectfully disagrees. As discussed in the Office Action, FSM and Jennings are analogous in that both solicit forecast values from participants for data that changes over time. Jennings teaches that Bayesian Networks allow for the use of apriori statistical distributions on possible outcomes because it is more effective and efficient for determining the predictions of possible outcomes (col. 56, lines 10-30). Thus, it would be obvious to modify FSM to use Bayesian Networks allow for the use of apriori statistical distributions on possible outcomes because doing so would allow for more effective and efficient aggregation of participant's predictions, thereby improving the accuracy of ranking participants' performances. FSM would want improvement of the accuracy of ranking participant's performances as doing so enhances the integrity of the game. Therefore, Examiner respectfully submits that there is suggestion or motivation to combine FSM with Jennings to reject claims 7 and 8.

In the Remarks on pages 17-18, Applicant argues that the FSM/Clyman combination does not render obvious claim 12.

In response to the argument, Examiner respectfully disagrees. Based on Applicant's Specification, an Arrow-Debreu state security is when each state has lottery like properties that pay off a reward based on a positive outcome of an event or occurrence of a state. Thus, claim 12 merely recites associating a payoff reward with each state of the information market. Accordingly, on page 6 of Clyman, which is titled, "A First Simple Arrow-Debreu Market Game," Clyman discloses an example of an

Art Unit: 3623

Arrow-Debreu Market Game that includes establishing payoffs (see bottom of page 6).

Therefore, Examiner respectfully submits that the FSM/Clyman combination does render obvious claim 12.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In independent claim 16, it is not clear what is meant by a probability conditioned upon all information acts of said experimental information market.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by fantasystockmarket.com (hereinafter, FSM).

As per claim 1, FSM discloses a forecasting process comprising:

running an information market, including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market (pages 1 and 3; Participants use fantasy money to trade stocks and mutual funds in a fantasy stock market.);

extracting participant characteristics through an analysis of results of trading of said financial instruments (pages 1 and 4; Participants' portfolios are tracked and they are ranked (i.e., based on their trading characteristics) against other participants.);

performing a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation (pages 1 and 3-4; By placing a trade on a stock or mutual fund, (i.e., buy/sell), a participant is indicating their confidence or lack thereof in the future prices of the stock/mutual fund.);

aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation (pages 3-4; Participants are ranked based on their trading performance. Thus, the results of how they trade impact their overall standing/ranking compared with other participants.).

As per claim 2, FSM discloses a forecasting process wherein said information market is designed to elicit characteristics of participants (pages 1, 3-4, 9; The fantasy stock market is used to track participant trading performance.).

As per claim 3, FSM discloses a forecasting process wherein said characteristics include participant risk inclination (pages 1, 3-4; How much a participant trades and the type of stocks/mutual funds they trade in are indications of the participants' risk inclination.).

As per claim 4, FSM discloses a forecasting process wherein said characteristics include participants ability to analyze information provided in said information market (pages 1, 3-4, 9; Participants trade in over 25,000 stocks/mutual funds listed in the NY, NASDAQ, American, etc. stock exchanges, thus reflecting different scenarios with different information. A player's ranking reflects how well they understood and utilized the various stock/mutual fund information.).

As per claim 5, FSM discloses a forecasting process further comprising correlating observed behavior to accepted characteristic tendencies (pages 1, 3-4, 9; Participants are ranked by correlating their trading performance to accepted trading tendencies.).

As per claim 6, FSM discloses a forecasting process wherein said information market includes an artificial market financial instrument corresponding to a real world state (page 1).

Claims 9-11 and 13-19 recite substantially similar subject matter to claims 1-6 above. Therefore, claims 9-11 and 13-19 are rejected on the same basis as claims 1-6 above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Jennings et al. (U.S. 6,606,615).

As per claim 7, FSM does not expressly disclose a forecasting process wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants. Jennings et al. discloses a forecasting process wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants (col. 53, lines 30-40; Apriori probabilities are revised to aggregate the predictions.). FSM and Jennings et al. are analogous in that both solicit forecast values from participants for data that changes over time. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM to aggregate the results of the query process by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants as doing so enables FSM to generate a more accurate estimation of the statistical distributions associated with market expectations of future outcomes, thereby

enhancing the accuracy of the measure of market sentiment relating to values of the stocks and mutual funds, which enables a better ranking of participants' performances.

As per claim 8, FSM does not expressly disclose a forecasting process wherein the results of the query process are aggregated by utilizing Bayes formula with each probability of said future outcome occurrence assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics. Jennings et al. discloses a forecasting process wherein the results of the query process are aggregated by utilizing Bayes formula with each probability of the potential outcome assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics (col. 53, lines 30-40; The aggregation uses Bayesian estimators.). FSM and Jennings et al. are analogous in that both solicit forecast values from participants for data that changes over time. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM to aggregate the results of the query process by utilizing Bayes formula with each probability of the potential outcome assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics as doing so enables FSM to generate a more accurate estimation of the statistical distributions associated with market expectations of future outcomes, thereby enhancing the accuracy of the measure of market sentiment relating to values of the stocks and mutual funds, which enables a better ranking of participants' performances.

Art Unit: 3623

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Clyman, "Unreasonable Rationality?" 1995.

As per claim 12, FSM does not expressly disclose a computer system wherein possible information market states are associated with an Arrow-Debreu state security. Clyman discloses market games being associated with an Arrow-Debreu state security (pages 4-5). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM so that its information market states are associated with an Arrow-Debreu state security as Arrow-Debreu securities allow participants to trade in a single state, thereby simplifying the game for participants.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Tsukimoto (U.S. 6,353,816).

As per claim 20, FSM does not expressly disclose a new environment aggregation function analysis process wherein three information aggregation mechanisms are compared to the benchmark distribution by using a Kullback-Leibler measure, wherein said three information aggregation mechanisms include a no information prediction aggregation mechanism for aggregating predictions regarding said experimental information market which are based upon no information about said experimental information market, a prediction aggregation mechanism for aggregating experimental information market predictions of a best performing participant in said experimental information market, and a prediction aggregation mechanism based upon

a non-linear aggregation of experimental information market predictions of said participants with exponential factoring for characteristics of the individual participants and the experimental information market as a whole. Tsukimoto discloses using the Kullback-Leibler measure to measure the distance between a model and a true distribution for predicting the true probability distribution from given data (col. 19, lines 33-43). In this case, the given data may be the three information aggregation mechanisms, which are currently non-functional as they do not alter the comparison being performed, but instead, just provide data for the comparison. Thus, this descriptive material will not distinguish the claimed invention from the prior art in terms of patentability, see *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983); *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994); MPEP 2106. Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM to use the Kullback-Leibler measure as doing so ensures an accurate measure of the true distribution among values, thereby enhancing the accuracy of the benchmark comparison.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Michelle Tarae whose telephone number is 571-272-6727. The examiner can normally be reached Monday – Friday from 8:30am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz, can be reached at 571-272-6729.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Application/Control Number: 09/976,959

Page 13

Art Unit: 3623

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


C. MICHELLE TARAE
PRIMARY EXAMINER

July 13, 2007